18 DEC. 1934

DEPARTMENT OF INDUSTRIES

BOMBAY PRESIDENCY

ANNUAL REPORT

1933-34

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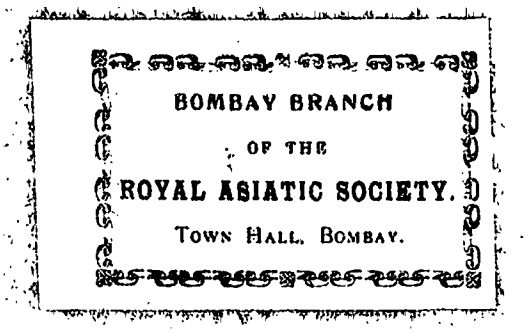

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OFFICE OF THE DIRECTOR OF INDUSTRIES,
OLD CUSTOM HOUSE,
Bombay, 1st May 1934.

From

P. B. ADVANI, ESQ., M.Sc.TECH., M.I.E., J.P.,
Director of Industries,
Bombay;

To

THE SECRETARY TO GOVERNMENT,
General Department,
Bombay.

Subject.—Annual Report of the Department of Industries, 1933-34.

Sir,

I have the honour to submit the Annual Report of the Department of Industries for the year 1933-34.

I have the honour to be,
Sir,
Your most obedient servant,

P. B. ADVANI,
Director of Industries.

Annual Report of the Department of Industries, Bombay Presidency, for the year 1933-34

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CHAPTER I

GENERAL INDUSTRIAL OUTLOOK DURING THE YEAR

The commercial and industrial depression mentioned in the opening paragraph of last year's report continued unabated. At the commencement of the year there were signs of improvement but towards the end of the year conditions became less favourable. Commodity prices continued to rule low, with the result that the purchasing power of the agriculturist which has been very restricted for some time past did not improve to any extent. Added to this, the various local industries suffered greatly from the very severe Japanese competition due to the unprecedented depreciation of the Yen. Very large quantities of extremely cheap Japanese goods of various kinds flooded the market to the detriment of local industries. In the last week of December 1933 Government of India introduced a Tariff Amendment Bill in the Legislative Assembly to give protection to some 20 industries to enable them to meet the Japanese competition. Sugar industry also received a good measure of protection during the year. A new trade agreement was arrived at with Japan restricting Japanese Textile imports into India. It is hoped that these measures of the Government of India will enable the industries concerned to progress satisfactorily during the coming year.

STATE OF SOME OF THE MORE IMPORTANT EXISTING INDUSTRIES

2. **Cotton Textile Industry.**—The condition of the industry during the year under review was far from satisfactory. The difficulties experienced by the industry during the previous years continued and the general position worsened. Very severe Japanese competition was largely responsible for this state. Some of the textile mills in the City of Bombay had to close temporarily and some went into liquidation.

Up to the time of writing, 25 Annual Reports of cotton mills for 1933 working in the City and Island of Bombay have been received. These reports disclose the following position :-

Eleven mills show a loss of Rs. 22·66 lakhs. Fourteen mills show gross profits of Rs. 26·88 lakhs not allowing for depreciation. Out of this group only nine mills could declare dividends, three of these having to draw their dividend from the equalisation funds.

Reports were received from 4 Sholapur mills for the year 1933, showing profits of Rs. 8·38 lakhs. Dividends were declared by these mills. Khandesh mills reports show an annual profit of Rs. 6·84 lakhs ; these mills also declared dividends.

The Annual Reports of Ahmedabad mills are issued in the latter part of the year. Hence no reports have so far been received for the year 1933.

The Annual Reports of working of the various mills received in this office disclose the fact that the condition as a whole of the textile industry in this Presidency was far from satisfactory during the year.

The Report of further protection to the Textile Industry by the Tariff Board was published during the year. The successive increases in the tariff on cotton piecegoods are shown in the following statement :—

	British	Non-British
January 1930	.. 15 per cent. ad valorem or $3\frac{1}{2}$ as. per lb. whichever is higher.	20 per cent. ad valorem or $3\frac{1}{2}$ as. per lb. whichever is higher.
January 1931	.. 20 per cent. ad valorem or $3\frac{1}{2}$ as. per lb. whichever is higher.	25 per cent. ad valorem or $3\frac{1}{2}$ as. per lb. whichever is higher.
January 1932	.. 25 per cent. ad valorem or $4\frac{3}{8}$ as. per lb. whichever is higher.	$31\frac{1}{4}$ per cent. ad valorem or $4\frac{3}{8}$ per lb. whichever is higher
30th August 1932	.. 25 per cent. ad valorem or $4\frac{3}{8}$ as. per lb. whichever is higher.	50 per cent. ad valorem or $5\frac{1}{4}$ as. per lb. whichever is higher.
7th June 1933	.. 25 per cent. ad valorem or $4\frac{3}{8}$ as. per lb. whichever is higher.	75 per cent. ad valorem or $6\frac{3}{4}$ as. per lb. whichever is higher.

These rates of duty remained in force till 31st March 1934. From 1st April 1934 new rates of tariffs were fixed in accordance with the recommendations of the Tariff Board and the Indo-Japanese Trade Convention. The present rates are as follows :

British	Non-British
25 per cent. ad valorem or $4\frac{3}{8}$ as. per lb. whichever is higher.	50 per cent. ad valorem or $5\frac{1}{4}$ as. per lb. whichever is higher.

The new Indo-Japanese Trade Agreement was completed during the year. The quantity of Japanese imports under this agreement have been definitely laid down and are not to exceed 400 million yards per annum. The new agreement should be of considerable assistance to the Textile Industry of the country.

The following statistical tables covering cotton mills in the Bombay Presidency will be of interest :—

For the year ending 31st August.	Number of mills.	Number of spindles.	Number of looms.	Average number of hands employed.	Cotton consumed.	Paid-up capital.
					Cwts.	Rs.
1931 ..	218	6,290,233	138,153	250,357	5,470,906	24,01,66,075
1932 ..	220	6,443,519	141,241	256,200	5,984,720	24,58,20,563
1933 ..	220	6,468,794	142,591	252,417	5,690,692	23,83,18,186
Percentage increase or decrease as compared to 1932.	..	+0·4	+1·04	—1·5	—4·91	....

Production in and Imports of Yarn and Piece-goods into Bombay Presidency

Year ending 31st March	Yarn (in million pounds).			Piece-goods (in million yards).		
	Presidency production	Imports into the Presidency	Percentage of imports to production	Presidency production	Imports into the Presidency	Percentage of imports to production.
1930-31	476	9·9	2·1	1,830	347	18·9
1931-32	549	12·3	2·2	2,188	389	18·0
1932-33	559	17·6	3·2	2,266	638	28·2
1933-34	286*	8·0**	..	1,157*	344**	..

* Up to October 1933. ** Up to January 1934.

3. **Woollen Mills.**—The condition of the woollen industry was far from satisfactory during the year under review. The two mills which were working during the last year continued to work during the year 1933. There was a decrease of about 31 per cent. in the quantity of woollen goods produced in these mills and of about 12 per cent. in the value of the same, when compared with the figures for the last year. In the year 1932 the woollen mills showed a total production of 1,857,835 lbs. valued at Rs. 30,06,810, whereas in the year 1933 the total production was 1,472,885 lbs. valued at Rs. 26,43,744.

Imports of woollens in Bombay and Karachi amounted to Rs. 56·38 lakhs in 1931–32, Rs. 164·60 lakhs in 1932–33 and Rs. 139·29 lakhs up to the end of February 1934. The imports have decreased by 15·4 per cent. when compared with the figures of imports for the preceding year. Apart from this, Bombay also imported woollen goods from Cawnpore and other important woollen manufacturing centres in India.

Bombay woollen mills supply a very small quantity of the Presidency's requirements. The woollen industry in the Bombay Presidency cannot be said to be in a satisfactory condition.

4. **Hosiery Industry.**—There has been no improvement in the generally depressed condition of this industry. Factors such as the general economic depression and acute competition from imported hosiery have contributed to this. The hosiery knitting factories, as well as the textile mills equipped with knitting machines have suffered by this depression.

The local production of knitted goods has also been reduced. During 1931–32 production was approximately 480,000 lbs. In 1932–33 it was 456,000 lbs.

The imports of cotton woollen hosiery during 1931–32 were valued at Rs. 20·5 lakhs. The imports for 1932–33 were valued at Rs. 21·44 lakhs. The average price ruling during 1932–33 was much lower than in 1931–32.

There is a considerable field for the development of this industry as evidenced by figures of hosiery imported into India.

The import duties on hosiery in 1933–34 and on 1st April 1934 were as follows :

1933–34	.. Cotton hosiery	.. 25 per cent. ad valorem.
1st April 1934	.. Cotton hosiery	.. 25 per cent. ad valorem or 12 as. per lb. whichever is higher.
1933–34	.. Silk hosiery	.. 25 per cent. ad valorem.
1st April 1934	.. Do.	.. British—40 per cent. ad valorem. Non-British—50 per cent. ad valorem.
1933–34	.. Woollen hosiery	.. British—25 per cent. ad valorem. Non-British—35 per cent. ad valorem.
1st April 1934	.. Woollen hosiery	.. British—25 per cent. ad valorem. Non-British—35 per cent. ad valorem.

5. **Silk Fabrics.**—Both of the two large silk mills closed down during the year due to the flooding of the local markets with silk piecegoods from Japan. The other two silk weaving factories which are very small and weave Crepe-de-Chine and Georgette found it difficult to keep running. At the passage of the recent textile bill, the opportunity was also taken of incorporating into the bill the decision of the Government of India on the recommendation of the Tariff Board appointed to investigate the claims of the Sericultural Industry to protection. The following are duties on silk fabrics :—

1933–34	.. Silk piecegoods ..	.. 50 per cent. ad valorem.
1st April 1934	.. Fangee ..	.. 50 per cent. ad valorem plus Re. 1 per lb.
	Paj, Boseki or Corded	.. 50 per cent. ad valorem plus Re. 1-8 per lb.
	Other sorts ..	.. 50 per cent. ad valorem plus Rs. 2 per lb.

It is hoped that the silk fabrics industry in India will benefit by the measures of the Government.

6. **Gas Mantles.**—The year under report was a very bad year for the gas mantle industry. Several small gas mantle manufacturing establishments sprang up during the year. The quality of goods produced by some of them was of such an inferior nature that the consumers have lost faith in the Indian gas mantles. As a result of this the genuine well-established manufacturers also could not easily sell their products. The difficulty of obtaining the chemicals has almost ceased to exist. But due to its bad reputation the Indian gas mantle industry did not fare well during the year.

7. **Chemical Industries.**—As was the case last year, Chemical Industry except the Heavy Chemical Industry did fairly well during the year. Toilet goods making factories have done fairly well in spite of foreign competition. The paint and varnish making industry suffered due to the imposition of vend fees on the denatured spirit. One factory for the manufacture of Sulphuric Acid, Nitric Acid and Hydrochloric Acid is being erected near Ahmedabad. This factory would supply the demand for these acids in that locality.

8. **Sugar Industry.**—There was only one factory working satisfactorily in the Presidency during the year 1932–33. During the year under report, 7 new factories have been erected in the Presidency. Four of these have been erected in the Deccan Canals Area and 2 are in Indian States. Five of these factories have already started work. The individual capacity of all these factories for crushing canes varies from 150 tons to 400 tons of cane per day. In the year 1932–33 the imports of sugar into Bombay and Karachi were about 200,000 tons valued at about Rs. 2 crores.

The corresponding figures for the year under report are 158,000 tons and Rs. 1·6 crores respectively. Taking into consideration the above developments the year under report was the most remarkable in the history of the development of sugar industry in the Presidency.

9. **Match Industry.**—During the year under report two match factories were closed down in the Presidency. Out of these, one was closed due to its being burnt down. There are in all now 11 match factories in the Presidency. The approximate number of persons employed in these factories was 4,700. Imports of matches into Bombay Presidency are negligible and what little imports there are, are fancy matches for advertisement purposes. It is reported that during the year under review match factories did not fare well owing to keen internal competition. The Government of India have recently imposed an excise duty of Rs. 2, Re. 1-8 and Re. 1 per one gross match boxes containing matches above 60, above 40 and below 40 respectively. It is to be seen how this duty on matches is going to affect the match industry.

10. **Paper Industry.**—The two paper mills one in Poona and the other in Bombay belonging to the Deccan Paper Mills Co. Ltd. worked throughout the year. One paper mill outside this group closed down during the same period. The production of paper increased slightly from 3,047 tons in 1932 to 3,163 tons in 1933. The value however decreased from Rs. 11·04 lakhs in 1932 to Rs. 10·95 lakhs in 1933. The decrease in value was due to the low price of paper prevailing during the year due to foreign competition. Considering however the general trade depression, the paper industry of the Presidency on the whole did fairly well. One paper mill is being erected at Barejadi near Ahmedabad. When the factory starts production it will supply a small part of the total demand in the Ahmedabad locality.

11. **Glass Industry.**—There are five glass factories in the Presidency. Out of these, one closed down during the year under report. One of the remaining four is engaged in the manufacture of glass bangles and the other three in the manufacture of globes, chimneys and other glass articles. Due to keen Japanese competition the industry did not do well during the year under report.

12. **Oil Mills.**—Besides the 11 oil mills with a paid-up capital of Rs. 56·95 lakhs mentioned in the Annual Report for the year 1932-33, one private company with an authorised capital of Rs. 2,50,000 was registered during the year under review. In addition to these registered companies, there are about 115 oil mills in this Presidency out of which 37 oil mills come under the Indian Factories Act. It is reported that the industry as a whole did not fare well during the year under review.

One important development in the oil industry is the erection of an oil refining plant capable of refining 5 to 10 tons of oil per day. If the plant works successfully both from technical and commercial points of

view, it will bring about a new phase in the oil industry of this Presidency. Another important development in the oil industry is the erection of an oil mill which will extract oil by solvent process. This will be the first mill of its kind in the Presidency using the solvent process.

13. **Vegetable Ghee.**—The two factories mentioned in the last year's report are reported not to have done well during the year under report. The industry is reported to have suffered due to the imports of hard fish oil from Japan which is used by some unscrupulous dealers in adulterating vegetable ghee. The imports into Bombay of vegetable ghee during the year were 65 tons valued at Rs. 48,000. The corresponding figures in 1932–33 were 935 tons valued at Rs. 7·3 lakhs.

14. **Soap Industry.**—As was the case last year, this year also a number of new factories were started and some closed down. It is very difficult to keep a record of all the soap factories; their exact number is, therefore, not known. It is however estimated that there are more than 60 big and small soap making factories in the Presidency. The soap industry along with others felt the severe competition of Japan. The new factories specially the small ones did not, therefore, do well during the year under report. Some three or four big factories with established reputation however are reported to have done well. As was the case last year, this year also Bombay exported nearly 95 per cent. of the total soap exported from this country. There was a slight increase in the export of soap during the year 1933–34. The Presidency exported nearly 2 lakhs rupees worth of soap during the year under report. There is a great scope for the development of the export trade in soap. If the big manufacturers study the exact requirements of the consumers in the countries where soap is exported they will be able to capture bigger markets than they have been able to do so far.

15. **Shoe Polishes.**—In spite of the fact that some small establishments manufacturing shoe polishes failed during the last year, two new small concerns started to manufacture shoe polishes during the year. It is difficult to say how many of these small concerns will survive against competition in the industry. The established factories which have been manufacturing these products for the last 2 or 3 years on a large scale are reported to have done well during the year.

16. **Engineering Industry.**—During the year 1933–34, three new Engineering works were registered with a total authorised capital of Rs. 5·5 lakhs. During this period two works closed down with a capital of Rs. 1·75 lakhs.

The total number of all the Engineering factories is now 147; out of which 35 are registered companies, the rest are small proprietary concerns. These include general engineering and constructional works,

electrical repair shops, automobile repair shops, machine shops, metal refining works, foundries and iron and steel works.

The major portion of the factories carry out repair works. Several small machine shops make spares for the textile machine trade. The general depression in other industries of this Presidency has affected the engineering industry also and the majority of these factories experienced considerable difficulties.

17. **Refining Alloys.**—There was no new factory started during the year for the refining of alloys. The existing factory has made some progress in spite of the market depression.

18. **Wire Nails and Wire.**—There are two factories for making nails. One of them has closed temporarily awaiting arrival of wire drawing machinery. There is also an existing factory making its own steel wire for the manufacturing of piping, which it used to import formerly. This factory also makes nails on a comparatively small scale. The working of the above factories has been helped through concession of tariff given by the Government of India on the rods imported for making wire and wire nails.

19. **Neon Signs.**—The advantages of neon advertising signs have been appreciated by numerous firms etc. It is pleasing to note that this has assisted the development of this new industry established recently in Bombay.

20. **Aluminium Industry.**—The depression in this industry has continued unabated. Factories making hollow-ware are turning to the manufacture of utensils from other sheet metals as well as conducting experiments in the manufacture of enamelled hollow-ware. Side lines such as manufacture of rivets both aluminium and copper from scrap have been introduced.

21. **Gold Thread Industry.**—This industry has been severely hit by the acute trade depression. This adverse condition has been further accentuated by heavy fluctuations in the prices of raw materials, viz. silver, gold and silk yarns. On account of this, gold thread manufacturers have adopted a cautious policy and turned out only limited quantities of gold thread. The industry as a whole did poorly during the year under review.

22. **Cigarette Industry.**—It was reported in the last year's report that there were 14 factories in this Presidency. The number has been reduced to 11 during the year under review. But this has been due to the amalgamation of 3 factories into one. One factory in Sind has closed. One factory in Bombay closed during the year and a new one was started at the same time.

The imports of cigarettes into Bombay have slowly declined as is shown in the following statement :—

	Rs.	
1929-30	76	lakhs.
1930-31	50	,,
1931-32	22·74	,,
1932-33 Bombay only	7·47	,,

This decline has been due to several factors such as the economic depression and the increase in the supplies of local cigarettes and cigarettes from other factories in India.

As mentioned in the last year's report, the experiment for cultivation of American Virginian Tobacco is well advanced. It is hoped that the ultimate results would yield a tobacco leaf which would supply the growing demands of cigarette factories for Indian-grown American Virginian Leaf Tobacco.

23. **Carbon Papers, Typewriter Ribbons and Stamping Pads.**—As mentioned in the last year's report, the factory at Karachi manufacturing carbon papers, typewriter ribbons and stamping pads is reported to have done well during the year. The company has been able to secure contracts from public bodies and Government departments for the supply of the above products.

NEW ENTERPRISES

24. During the year under review several new factories were established in the Presidency. A factory for the manufacture of biscuits and another for envelopes were established in Karachi. Similarly, a factory for the manufacture of bicycle tubes and cab tyres was also established in the same city. Hosiery factories were established in Sukkur and elsewhere.

New factories were also started in Bombay and the Presidency such as electro-plating and electro-galvanizing, manufacture of tricycles, spares for bicycles, Bakelite accessories both electrical and toilet purposes, pressure die castings of non-ferrous metal, vitrified metal sign boards, freezing of marine products, manufacture of dry cells, batteries and accumulators, metal screws, laboratory apparatus, time-pieces and clocks, hollow-ware, pumps, oil engines etc. Where necessary, the names of the factories were brought to the notice of the Directors of Industries in other provinces and other Governments and commercial bodies likely to be interested. Some of these factories are reviewed herebelow.

25. **Safety Razor Blades.**—A factory has been started in Bombay for the manufacture of safety razor blades from imported strip steel. Indian steel works do not make razor strip steel. The blades turned out by the factory bear good comparison with the imported razor blades.

26. **Canvas Shoe Manufacture.**—During the year under review another factory was started in the suburbs of Bombay for the manufacture of canvas shoes. The factory is well equipped and has a maximum capacity of 5,000 pairs of rubber-soled canvas shoes per day. The workmanship and quality of shoes turned out by the factory are very good. There are now three factories for making rubber-soled canvas shoes in the Bombay Presidency.

27. **Bakelite Materials.**—One of the factories mentioned in last year's report stopped work. Two new factories were, however, started which manufacture sanitary fittings, unbreakable crockery, containers for chemicals, soaps and drugs, etc. and stationery articles. The existing factory for making bakelite electrical accessories doubled its number of machines.

28. **Manufacture of Metal Screws.**—A factory in Bombay equipped with fully automatic machine has commenced the manufacture of metal screws and nuts. The factory uses imported bars as the rolling mills in India do not manufacture bars for use with automatic machinery. The finish of the screws and the class of manufacture are very good. There is a considerable scope for the manufacture of both metal and wood screws in the Presidency.

29. **Manufacture of Lead Wool.**—A local engineering firm in Bombay has put up a plant for the manufacture of lead wool for use as caulked joints of cast-iron water mains. The lead wool manufactured has been favourably commented upon.

30. **Enamel Signs.**—A factory for the manufacture of vitrified enamel sign boards of all kinds and colours has recently been started in the Thana District.

31. **Dry Cell Manufacture.**—There are now two small factories in Bombay manufacturing Dry Cells for pocket lamp batteries. A considerable quantity of dry cells is consumed in this Presidency both railed from Bengal and imported into India. The following statement gives the value of imports of Dry Batteries into India :—

	Rs.
1929–30	11,81,568
1930–31	10,45,203
1931–32	9,06,613

32. **Accumulators.**—A well equipped factory for the complete manufacture of motor car batteries—6 and 12 volts—accumulators for Train lighting and Radio, telephone, telegraph batteries 2 and 4 volts, was established in Bombay during the year. The maximum total production per month for this factory of all types of batteries is about 3,000 battery

units. The Company utilises partly indigenous and partly imported raw materials for making the complete cell unit. The import figures of batteries and accumulators into India are given below :—

	Rs.
1929–30	25,88,583
1930–31	18,43,083
1931–32	8,54,768

33. **Oil Engines.**—Cooper Engineering Works, Satara, manufacturers of agricultural implements, commenced during the year the manufacture of small crude oil engines. This is the only factory in the Presidency which makes crude oil engines. An engine made at this factory was successfully exhibited at the H.O.H. Fete and Exhibition, Bombay. The design, workmanship and working of the engine were found to be of a high order. It is gratifying to note that a beginning has been successfully made to supply the local requirements of small oil engines.

34. **Manufacture of Tricycles, Perambulators and Cycle Accessories.**—A factory for the manufacture of tricycles etc. was started recently in Bombay utilising 50 per cent. indigenous and 50 per cent. imported raw materials for its work. The factory turns out well designed and finished units. The concern is at present experiencing severe Japanese competition.

35. **Electro-plating and Galvanizing.**—A small well equipped factory has started work in Bombay for galvanising metal by the electrolytic method. The factory has been doing very successful and useful work.

36. **Pressure Die Castings—non-ferrous metals.**—An engineering factory in Bombay has installed the latest type of hydraulic machinery for die castings from semi-plastic non-ferrous melts. They have started manufacturing assorted metal fittings etc., the quality and finish of the metal fittings turned out are of a very high order.

37. **Manufacture of Pressed Utensils etc.**—A leading aluminium factory has installed the necessary machines for the manufacture of German Silver pressed hollow ware from cast ingots. This factory has also added a plant for the manufacture of copper and aluminium rivets.

38. **Manufacture of Bicycle Tyres and Tubes and Cab Tyres.**—A well equipped modern factory for the manufacture of cycle tubes etc. was established at Karachi during the year under review. The factory is turning out products of excellent quality and finish. This is the only factory of its kind in India.

39. **Manufacture of Clocks and Time-pieces.**—A new factory was started in Bombay for the manufacture of alarm time-pieces. This together with the existing factories in this Presidency brings the total to three. These factories have considerably improved the workmanship and finish of both alarm time-pieces and clocks, mechanically and electrically driven. The industry has been experiencing severe competition from cheap imported time-pieces.

40. **Sandalwood Oil.**—It is gratifying to note that essential oil industry is gradually developing in this Presidency, after this Department showed the public the method of extracting essential oils. Small essential oil making establishments have come into existence and enquiries in this line are increasing. One important example in the essential oil industry in the Presidency is the establishment of a factory for the manufacture of sandalwood oil on a large scale in the City of Bombay. This establishment experienced some technical difficulties regarding filtration and clarification of oil. The Department gave necessary advice and those difficulties have been overcome. The factory is the first of its kind in the Presidency and deserves encouragement from the public and Government Departments using sandalwood oil.

41. **Chocolates, Sweets, etc.**—A factory has been started in Bombay for the manufacture of chocolates etc. The factory started working in January 1934 and it manufactures high quality products which are cocoa-powder, chocolates and sweets. Wherever possible the factory utilises Indian raw materials.

NEW FLOTATIONS

42. Despite the fact that there was general trade slump during the year under review, many new companies were floated. These were :—6 Cotton Mills with authorised capital of Rs. 40·54 lakhs, 6 Electrical undertakings with authorised capital of Rs. 16 lakhs, 3 Sugar Mills with authorised capital of Rs. 30 lakhs, 3 Tobacco factories with authorised capital of Rs. 8·50 lakhs, 4 Works manufacturing chemicals and drugs with authorised capital of Rs. 5·50 lakhs, 8 Cinema companies with authorised capital of Rs. 16 lakhs, 2 concerns manufacturing motor car spare parts etc. with authorised capital of Rs. 3 lakhs, 1 concern for manufacturing cycles etc. with authorised capital of Rs. 2 lakhs, 1 concern for manufacturing cotton ropes with authorised capital of Rs. 1 lakh, 1 concern for refining mineral oils with authorised capital of Rs. 10 lakhs, 1 concern for manufacturing pottery with authorised capital of Rs. 5 lakhs, 1 paper mill with authorised capital of Rs. 3 lakhs, 2 soap works with authorised capital of Rs. 2 lakhs, 1 flour mill with authorised capital of Rs. 50 thousand, 1 oil mill with authorised capital of Rs. 2·50 lakhs, 1 concern for the manufacture of accumulators with authorised capital of Rs. 2·50 lakhs, 1 concern for the manufacture of Bakelite articles with authorised capital of Rs. 1 lakh and 1 concern with the object of development of fisheries with authorised capital of Rs. 25 thousand, making a total authorised capital of Rs. 1·51 crores.

During the year under review, 10 cotton mills, 2 mining concerns, 2 sugar mills, 2 engineering works, 1 ice and ærated water factory, 1 chemical works, 1 canvas and rubber shoe factory, 1 tobacco factory, 1 cotton ginning and pressing factory, 1 electrical undertaking with total paid up capital of Rs. 2·18 crores went into liquidation.

CHAPTER II

WORK OF THE DEPARTMENT—ORGANISED INDUSTRIES

43. In this Chapter a brief description is given of the various activities of the Department in the interest of organised industries.

There are many small scale organised industries in this Presidency, not to speak of cottage industries, which have in use technical processes and appliances capable of considerable improvements which when carried out will enable the factories in question to provide better quality and larger quantities of finished products for the same labour and cost. This kind of work naturally involves a careful study of the industry concerned and a considerable amount of experimental work. Successful endeavours in this direction would enable the industries concerned to compete better with imports and would also increase production in the country. During the year under review work in connection with Gold Thread Industry was continued and work in connection with Cashewnut and Sugar-candy Industries was started.

In a similar manner, there are certain small scale industries which could be established in the province and which at present either do not exist or exist on a restricted scale. In order that such industries may be established, some practical experimental work in connection therewith is necessary. During the year under report the Department carried out work in connection with Tallow Substitute, Peppermint Oil, Alumina and Aluminium Sulphates, Thorium Nitrate, Lemon Oil, Mango Pulp and Magnetite Sand.

PRACTICAL INVESTIGATIONS, EXPERIMENTS AND DEMONSTRATION WORK TO IMPROVE THE QUALITY AND QUANTITY OF PRODUCTS OF EXISTING INDUSTRIES

(*a*) The Real Gold Thread Industry

44. Patents were obtained for the machines referred to in paragraph 34 of the Annual Report for the year 1932–33, *viz.* (1) Hand wire draw bench and (2) Wire flattening rolls. The work of demonstrating these machines together with the electric annealing chamber, and instructions for cleaning and alloying silver melt was continued in the other centres of the Presidency which also manufacture gold thread. The demonstration to the gold thread manufacturers and workers at Poona was carried out from 10th January 1934 to 29th January 1934. The manufacturers and workers in the line took great interest in the demonstration and many of them desired that the demonstration should be made for a still further period in Poona. The demonstration was removed from Poona to Yeola where the same was conducted upto the end of February 1934. Nearly 30 wire drawers witnessed the drawing of silver wire on the wire draw bench and appreciated the quick and efficient working of the machine. Many of them also

brought their own silver and drew the wire on the machine. The results of the demonstration work as well as the work done on smaller wire drawing machine in Surat and Bombay show that the hand worker can practically double his production over that attained by the hand wire drawers at present. The process of annealing the wire by means of electrical annealing chamber was also explained to the wire-drawers and the wire drawn by them was also annealed. The Industrial Engineer visited all the Powtawallah factories at Yeola and gave the workers practical demonstration for alloying silver, use of cleaning chemicals, and heating of the silver melt. Written detailed instructions in vernacular were also supplied to the parties.

As regards the wire flattening machine, 5 gold thread manufacturers of Yeola took the machine to their factories and flattened their wire on it. They were satisfied that the wire could be flattened in less time, the brilliancy of the flattened wire was better and the breakages were considerably less than was possible by the old methods. Negotiations are going on with these parties for construction of such similar machines. In this connection the Department has carried out extensive trials with different types of steel for the flattening rolls. As a result, the difficulties experienced by gold thread manufacturers regarding the durability of the flattening rolls have been practically solved.

As patents have now been obtained for the above two machines, Messrs. The Surat Engineering Works have been authorised to construct these machines on payment of 10 per cent. royalty. Hitherto 6 machines have been constructed by the above firm for gold thread manufacturers of Surat and Bombay.

The Industrial Engineer has also designed an improved type of lametta winding machine and a light type of hand wire drawing machine for boys and girls. These machines will be demonstrated during the current year. Patents for these machines are being filed.

Instructions in the alloying of silver melt and care in heating and use of chemicals have borne fruit. The Powtawallahs are now able to make superior alloyed silver which has helped to a large extent in improving the strength and lustre of the silver lametta.

The demonstration work carried out by the Department has assisted the Gold Thread Industry in the Presidency to a considerable extent.

(*b*) Cashewnut Shell Oil

45. Cashewnut roasting is an important industry of the Malvan and Vengurla talukas of the Bombay Presidency. Large quantities of shell oil are produced during the process of roasting which has found industrial application in America. It is possible that this oil may be used in this country also. This Department has therefore undertaken the study of the properties of this oil.

(c) Sugar Candy

46. Sugar candy industry of the Presidency has several technical problems which when solved could put the industry on a somewhat better economic basis in these days of keen competition from Japan. This Department therefore tried to investigate some of the difficulties and to find remedies for the same. Investigation has not been completed.

PRACTICAL INVESTIGATIONS, EXPERIMENTS AND DEMONSTRATIONS FOR POSSIBLE NEW INDUSTRIES

(a) Tallow Substitute

47. This Department had undertaken an investigation for finding a substitute for imported animal tallow used in the Textile Industry. The results of this investigation are incorporated in the bulletin "Tallow Substitute from Vegetable Oils" which was published during the year under report. It has been found that it is possible to manufacture a substitute for imported animal tallow from vegetable oils by hydrogenating a mixture of oils in definite proportion under definite physical conditions. The publication has aroused considerable interest among millowners.

(b) Peppermint Oil

48. It was mentioned in the last year's report that a demonstration for the preparation of peppermint oil from peppermint plants grown in this Presidency was carried out at Dahanu and Betegaon in the Thana District. The demonstration was carried out at these places because the peppermint plant is only available in those localities. On further investigation however it has been found that these localities are not suitable for the development of peppermint oil industry as the rainfall in that locality is too heavy for the plant. Efforts are being made to induce some enterprising agriculturists of some other districts where conditions are more favourable to grow peppermint plants. It has been found that it is possible to establish peppermint oil making industry in the Presidency on a fairly appreciable scale.

(c) Alumina and Aluminium Sulphates

49. It was mentioned in the last year's report that investigation had been undertaken to find out a suitable process for the preparation of Alumina and Aluminium Sulphates from local bauxites. Investigation is still in progress.

(d) Thorium Nitrate

50. It has been mentioned in one of the previous paragraphs that the difficulty of obtaining Thorium Nitrate by the gas mantle manufacturers no longer exists. As the problem of extracting Thoria from Monazite sands from Travancore will bring about economy in the manufacture of gas mantles the work is being continued.

(e) Lemon Oil

51. Due to the over-production of lemons and general trade depression the price realised by the lemon growers has gone down very low and it is reported that several lemon growers have found their plantations unprofitable and are destroying them in order to grow other crops in the same area. One enterprising lemon grower at Utran however has tried to extract juice from lemons and bottle it for markets. He was experiencing several difficulties as to the taste of the juice, its keeping quality, its acidity, etc. The Industrial Chemist of this Department visited the place and investigated the problem. He thought that from the discarded peels it was possible to extract lemon oil. Experiments were carried out and it has been found that it is possible to get a fairly good quality of oil from the lemon peels. The demonstration of the method of extracting oil was given to the party. It is expected that they will extract lemon oil from the next season. Investigation is still in progress in order to study the physical and chemical properties of this oil and to find its proper economic value. The results of this investigation will be published in the form of a bulletin as soon as they are ready.

(f) Mango Pulp

52. Mango is an important fruit of the Presidency. So far it is consumed mostly as such. There are some establishments which dry the pulp in the form of loose sticky sheets. But so far no attempts have been made to dry the mango pulp on the same lines as the drying of milk in the form of milk powder. Successful drying of pulp will make a good industry for those districts where mangoes are available in large quantities especially in Ratnagiri and Karwar Districts where mangoes after the steamer services are closed cannot be exported to mango markets. This Department undertook an investigation in this direction and found that it was possible to produce a friable powder by drying mango pulp under definite conditions of temperature and pressure. The powder was prepared on laboratory scale and was shown to various merchants and authorities on mango. They all said that if mango powder is available in this form it will find a good market. The method of drying mango pulp was demonstrated at the H. O. H. Fete. Several mango producers in Ratnagiri District were interested in the demonstration and have approached this Department for helping them in putting up a small plant for the production of mango powder. It has been decided to carry out investigation on a bigger scale to work out the cost and other data, etc., which will enable the Department to design a suitable plant for commercial exploitation.

(g) Magnetite Sand

53. Large quantities of sand containing magnetite are available on the coast of the creek near Ratnagiri. When the Industrial Chemist was in Ratnagiri he examined the sand and brought samples of the same. He has investigated the matter and has found that it is possible to get magnetite out of sand which can be used in the match industry as well as in paint, ceramic and oil cloth industries. It is, therefore, proposed to investigate the matter further to find out the possibility of economic exploitation of the sand.

PREPARATION OF ESTIMATES

54. During the year under review summaries of estimates prepared by this Department were supplied in response to several enquiries received in this office. Detailed estimates were also supplied to those who showed genuine interest in the schemes after perusal of the summaries supplied to them.

NEW ESTIMATES

55. **Handloom Factory.**—Enquiries are received from time to time in this Department for estimates for the establishment of small handloom factories either run by manual labour or motive power. A detailed estimate for a handloom factory worked by manual labour was, therefore, prepared. Capital investment will be as follows :—

	Rs.
Block capital	850
Working capital for 3 months	4,100
	4,950

The above figures are for a factory equipped with 10 fly shuttle looms producing silk shirtings from 210/2s of spun silk.

Another estimate for a factory producing silk bodice cloth with 20/22s China silk, 10/20s Bangalore silk for warp and 40s Indigo black yarn for weft was also prepared. The factory will be equipped with 10 fly shuttle looms and capital required will be as follows :—

	Rs.
Block capital	686
Working capital for 3 months	1,470
	2,156

A third estimate for a factory for producing cotton bodice cloth with 64/2s counts for warp and 40s for weft was also prepared. The factory will be equipped with 10 fly shuttle looms and capital required will be as follows :—

	Rs.
Block capital	650
Working capital for 3 months	1,350
	2,000

56. **Power-driven Silk Throwing Plant.**—An estimate has been prepared for a small power-driven silk winding doubling and twisting plant in response to enquiries from silk yarn merchants from the mofussil. This is for industrialists with a small capital :—

	Rs.
Block capital	6,200
Working capital	1,100
	7,300

The above estimate is for a factory producing 5½ to 6 lbs. of 13/15 deniers or 11 to 12 lbs. of 20/22 deniers filature silk per day.

SOLVING OF PRACTICAL DIFFICULTIES IN THE PROCESSES OF MANUFACTURE AND RENDERING OF TECHNICAL ADVICE

57. Apart from the work of improvements in technical processes in the making of gold thread, peppermint oil and soap etc., to which a reference is made elsewhere, a number of requests for assistance in the solution of practical difficulties was dealt with. A few of these are briefly summarised hereunder :—

(1) A gentleman from Bombay who had signed a contract with a foreign firm for the supply of bones of certain specifications found that the bones were much darker in colour than required by the specifications. He, therefore, approached this Department to show him some means of bleaching the bones by simple methods so that he could fulfil his contract. Samples of discoloured bones in question were brought to the laboratory and investigation was carried out by the Industrial Chemist and the process was demonstrated to the party for the bleaching of bones.

(2) A small establishment manufacturing confectionery in Bombay was suspicious about the purity of certain acids which they were using in the manufacture of acid drops etc. Samples of the acids were tested and found to be pure.

(3) A firm in Bombay approached this Department for the method of manufacture of lime from limestone according to certain specifications and also a simple method of determining whether a sample of lime was manufactured according to that particular specification. The necessary instructions were given to the representative of the firm.

(4) A party from Chalisgaon (District East Khandesh) wanted to manufacture a sizing material similar to the one they were using. The sample they were using was called for and analysed on payment of fees, and a detailed report was submitted as to how to prepare the substance similar to the one they were using.

(5) A cigarette factory in one of the Bombay Suburbs was experiencing difficulty about the crust formation in their boiler. The problem was investigated and it was found that they were using well water in the boiler as the same was cheaper than the municipal supply water. They were asked to change from well water to the municipal supply water and advised to return the condensed steam from steam traps to the boiler feed pump and thus minimise the cost of water. They have done accordingly and have overcome the difficulty.

(6) A gentleman from Bombay consulted the Industrial Chemist of this Department several times as to what chemicals it will be possible for him to manufacture from the raw materials available here. He was advised to start manufacturing acetic acid, potassium dichromate and white lead in the first instance. The gentleman has decided to manufacture the above products one by one and has placed an order for a complete plant for the manufacture of acetic acid from Calcium Acetate available from Bhadravati Iron Works, Mysore State. It is expected that the plant will arrive in Bombay shortly.

(7) A gentleman in Bombay wanted to put a certain silver gilding solution on the market. A sample of his product was analysed by the Industrial Chemist and was found to contain poisonous materials. He was, therefore, asked to put the product on the market with a distinct label on the container with the words "Poisonous" with instructions to wash and clean materials gilded and the hands of the persons using it.

(8) A firm in this Presidency manufacturing pocket knives and cutlery experienced difficulties in the tempering of the blades and the supply of suitable handles. Instructions in this connection were given to the representative of the firm and he was put in touch with local firms who could supply the necessary kinds of handles.

(9) An engineering firm in this Presidency wanted assistance in the lay-out of their new works extension. Detailed plans for the lay-out of the machinery and construction of supports were supplied to the firm.

(10) A factory experienced difficulties with respect to their steam requirements. The necessary advice on this was given to the party which has helped them to solve their difficulty.

(11) A factory melting and alloying silver experienced difficulties in the cleaning and casting of their melt. This difficulty was solved by practical instructions.

(12) A factory experienced difficulties with press dies for their machines. It was given the necessary instructions for the care and the selection of suitable steel for that particular work.

(13) A firm in Bombay was experiencing difficulties regarding the melting of non-ferrous metals. Practical instructions were given to the party which has solved this difficulty.

GENERAL ASSISTANCE TO INDUSTRIES

58. A number of new concerns came into existence during the year. Many of them were visited by a member of the staff of this Department. The concerns were given when required such advice as was necessary. They were also recommended to the several purchasing authorities in the country. In some cases the question of Railway freight, customs duty and cheap raw materials, etc., was taken up on behalf of the factories with the authorities concerned. Three examples of this kind of work are reviewed below :—

(*a*) A firm of mill-stores suppliers are contemplating establishing a shuttle manufacturing factory in Bombay. It is well known that wooden shuttles are extensively used in the textile industry and the demand for same is met from shuttles imported from foreign countries, there being no factory in India for the manufacture of shuttles. It has been found that wood suitable for the manufacture of shuttles is not available in the Indian forests and the substitutes suggested by the Forest Research Institute, Dehra Dun, are not up to the required standard. In England the manufacturers use wood blocks which are imported from America. The Bombay firm have decided to import these wood blocks for the manufacture of shuttles. Customs duty on timber other than fire wood is 25 per cent. *ad valorem* whereas finished articles pay only 10 per cent. duty. This Department submitted the case of the firm to the Government of Bombay for favour of moving the Government of India to grant the firm's request by allowing them to import wood blocks duty-free to enable them to establish the industry in India.

(*b*) A factory has recently been started near Kalyan on the G. I. P. Railway for the manufacture of vegetable oil from Indian seeds by solvent process using petrol as a solvent. At present there is a duty of annas 10 per gallon of petrol. The factory has applied to the Government of India for the remission of duty of annas 10 per gallon of petrol. This Department has investigated the matter and submitted the case to the Government of Bombay.

(*c*) A reference was made in the last year's report regarding assistance given to the Healds and Reeds Industry in the matter of lower customs duty on the raw materials required in the manufacture of healds and reeds. As a result of the representation made by the manufacturers of healds and reeds supported by the Government of Bombay, the Government of India have been pleased to refer the matter to the Tariff Board for enquiry and report.

COMMERCIAL AND INDUSTRIAL INTELLIGENCE

59. This branch of the Department continued to be both popular and useful.

As usual, enquiries from abroad for opening commercial relationships with Indian firms were transferred to the Director-General of Commercial Intelligence and Statistics, Calcutta. Enquiries from Indian firms for opening trade relationships with British firms were transferred to H. M. Trade Commissioner, Bombay.

Enquiries received and dealt with in this office may be divided into the following groups :—

(*a*) Statistical, i.e. asking for figures of imports and exports of raw materials as well as finished products.
(*b*) Names of dealers in and sources of raw materials.
(*c*) Names of Indian manufacturers of various articles.
(*d*) Enquiries covering standing etc. of firms.
(*e*) Miscellaneous.

In the year under report under groups (*a*), (*b*), (*c*) and (*e*) 331 enquiries were received and answered as against 293 in the year 1932-33. As usual, enquiries received from outside this Province were passed on to the Directors of Industries of the Provinces concerned for disposal with the necessary information where readily available.

Under group (*d*) 22 enquiries as against 26 in 1932-33 and 20 in 1931-32 were received and dealt with for the supply of information regarding financial standing and particulars of firms etc. Of these, 12 were from the Director-General of Commercial Intelligence and Statistics, Calcutta, four from the Stores Purchase Department, U. P., one from the Director of Commerce and Industries, Mysore, Bangalore, one from the Director of Industries, Punjab, one from the Director of Industries, C. P., one from the Director of Industries, U. P., one from the Consul for Japan and one from a local soap factory.

The Trade Publicity Officer of the High Commissioner for India, London, visited Bombay during the year and was introduced to a number of export firms and manufacturers with a view to the development of the Indian Export Trade with England, the British Empire and Europe. The Directors of Industries, Mysore and Travancore, were both similarly assisted during their visit to Bombay.

MINES AND MINERALS

60. The Department collected during the year the necessary statistics from the various District Magistrates in connection with mines and

minerals and submitted to Government a consolidated return in respect of them. The position revealed by these statistics was as follows.

During the year, prospecting licenses were granted or renewed for natural gas, bauxite and chromite ore.

The only mineral of importance raised during the year ending 31st December 1933 from mines exempted from the operation of the Indian Mines Act, 1923, was Fuller's earth. 18,713·50 maunds of this earth valued at Rs. 14,035–2–0, were raised from Met-Khan Mine in the Hyderabad (Sind) District.

Owing to a big slump in manganese trade, none of the eight manganese mines in the Presidency worked during the year ending 31st December 1933.

The Department dealt with a number of enquiries received from the public in connection with minerals, places of their occurrence, firms dealing in them etc.

61. Dr. Patel of this Department carried out investigations in the Bombay Suburban District, where a private party had suspected the presence of mineral oil and, with the help of the Department, had obtained a certificate of approval. On a detailed investigation of the entire area concerned, it was found that the traces of mineral oil and asphalt were due to surface deposition from some outside source and that there appeared no prospect of finding mineral oil, asphalt or any economic mineral.

Dr. Patel had investigated the natural gas at Ghogha in the Ahmedabad District, and from casual geological observation had suspected the gas field to extend on the other side of the Bay of Cambay. He accordingly made further investigations in this area and discovered the existence of natural gas in the Ankleshwar Taluka of the Broach and Panch Mahals District and of mineral oil in a small town in the Baroda State adjoining the boundary of the Ankleshwar Taluka.

The reports of this preliminary investigation regarding natural gas in Ghogha were placed at the disposal of the party, on whose behalf the investigations in the Bombay Suburban District had been undertaken, and as a result the gentleman concerned was granted prospecting licenses for the gas fields in Ghogha and Hajad, which is in the Ankleshwar Taluka of the Broach and Panch Mahals District. The Department further assisted him by general advice as to the way in which these gas fields might be developed.

CHAPTER III

WORK OF THE DEPARTMENT—COTTAGE INDUSTRIES

62. **Hand Weaving Industry.**—The Department continued its propaganda of helping and advancing the hand weaving industry which is the premier cottage industry of the Presidency by means of its weaving schools and demonstrations. Similarly Dyers and Calico Printers as well as weavers and others were helped in adopting improved and economic methods in dyeing and printing through Dyeing Demonstrations.

The Department, during the year under review, maintained seven weaving schools for bona-fide weavers, two weaving schools for agriculturists, 11 cotton weaving demonstrations, one wool weaving demonstration, one Cottage Sizing Set Demonstration, two Dyeing Demonstrations and one Central Hand Weaving Institute for fulfilling the above objects.

A brief account of the activities of the institutions is given below.

63. **Weaving Schools for bona-fide Weavers.**—During the year under review there were seven weaving schools for bona-fide weavers under the control of the Department. All the schools as usual imparted theoretical instructions and practical training in hand weaving by modern methods and improved appliances. They were conducted at the following centres ; the number of Flyshuttle looms introduced by them is mentioned against each :—

Divisions	Place	District	Number of Flyshuttle looms introduced
Southern Division..	.. Lakkundi	.. Dharwar ..	8
Central Division ..	.. Dharangaon	.. East Khandesh ..	72
Do. ..	.. Bhingar	.. Ahmednagar ..	24
Do. ..	.. Sinnar	.. Nasik ..	20
Northern Division..	.. Abrama	.. Surat ..	6
Sind ..	.. Hala	.. Hyderabad ..	51
Do. ..	.. Pir-jo-Goth	.. Sukkur ..	80

At the request of local weavers and leaders, the Weaving Schools at Lakkundi, Dharangaon, Bhingar, Abrama and Hala were continued there during the year. The school at Sinnar was brought to that town from Niphad. The school at Tatta was closed and opened at Pir-jo-Goth in the Sukkur District in the beginning of the year and it is gratifying to note that it showed very good progress there.

In addition to the introduction of Fly-shuttle hand looms as shown above the Weaving Schools in Southern Division and Central Division introduced seven and 104 dobbies respectively.

64. **Weaving Schools for Agriculturists.**—These are maintained exclusively for agriculturists with a view to train them in hand weaving by improved methods so that they can earn something during their spare time. During the year under review two such schools were maintained—one in the Southern Division and one in the Northern Division :—

(*a*) The Weaving School for agriculturists in the Southern Division was, owing to the request of local leaders, continued at Annigeri during the year. Seventeen agriculturists attended the school during the year under report. The school introduced 12 looms and four dobbies. The school started its work at Annigeri from August 1931 and worked there up to 31st March 1934. During this period 40 agriculturists attended the school and 32 looms, ten dobbies and three beams were introduced.

(*b*) The Weaving School for agriculturists in the Northern Division was working at Nikora in the beginning of the year. It finished its work there in October 1933 and introduced eight looms. It was then removed to Diwa a village in the Ankleshwar Taluka in Broach District where it started its work from November 1933. It trained ten agriculturists in hand weaving up to March 1934 all of whom are expected to set up their own looms in their Cottages. The school is to be continued at Diwa on the application of local leaders for a further term of six months from April 1934.

In addition to weaving of khadi, coating, towels, chaddars and dusters, weaving of figured saris and dhotis was introduced in the school during the year. The work of a Newar Weaving loom designed by this Department was also demonstrated.

65. **Weaving Demonstrations.**—In addition to the Weaving Schools mentioned above the Department also maintained 11 Cotton Weaving Demonstrations during the year under review. They were held at the following places and they introduced the number of Flyshuttle looms mentioned against each :—

Division	Place	District	Number of Flyshuttle looms introduced
Southern Division	Agadi ..	Dharwar ..	4
Do.	Sankeshwar ..	Belgaum ..	11
Do.	Kokankopp ..	Bijapur ..	14
Do.	Kadarmandalgi ..	Dharwar ..	....
Do.	Belad Bagevadi ..	Belgaum ..	....

Division	Place	District	Number of Flyshuttle looms introduced
Central Division	Tarala ..	Satara ..	25
Do.	Sangola ..	Sholapur ..	21
Do.	Bhaloni ..	Do. ..	7
Do.	Amoda ..	East Khandesh ..	17
Do.	Kumbharkheda ..	Do. ..	6
Northern Division	Broach ..	Broach ..	7
Do.	Lambhvel ..	Kaira ..	5
Do.	Keriavi ..	Do. ..	6
Do.	Kathlal ..	Do. ..	2
Do.	Antroli ..	Do. ..	6
Do.	Isnao ..	Do. ..	1
Sind	Lakhi ..	Sukkur ..	6
Do.	Shikarpur ..	Do. ..	17
Do.	Daharki ..	Do. ..	....

The Demonstrations working at Agadi and Sankeshwar were closed and transferred to Kadarmandalgi and Belad Bagevadi on 26th and 29th March 1934. The Demonstrations at Sangola and Amoda were closed and transferred respectively to Bhaloni and Kumbherkheda in January and February 1934. Owing to conservatism of the local weavers the Demonstration at Daharki could not show any progress. The Demonstration was, therefore, closed in March 1934 for removal to some suitable centre in the Thar Parkar District for the benefit of wool weavers there who are in need of instructions and training in improved methods and implements.

In addition to the introduction of looms shown above the Demonstrations in Southern and Central Division introduced 16 and 55 dobbies respectively.

66. **Cottage Sizing Set Demonstration.**—Four Weaving Schools have been equipped with a Cottage Sizing Set each to train the students on the machine in the preparatory processes of warping and sizing by modern methods.

A separate demonstration equipped with a sizing Set, flyshuttle loom and carpet weaving loom was also maintained in charge of one head master and one assistant master. The Demonstration during the year worked at Poona, Gokak, Bombay and Kankavli.

After finishing its work at the Industrial Exhibition in Poona the Demonstration staff helped the Empson Workshops and School, Poona, in adopting a Cottage Sizing Set. It was then removed to Gokak where it worked successfully. As this Department was considering the possibility of the use of Magnesium Chloride in Sizing processes by Hand weavers the Demonstration was transferred to Bombay to carry out certain experiments at the Victoria Jubilee Technical Institute, Matunga, Bombay, in October 1933. On finishing this work in January 1934 the Demonstration participated in the H.O.H. Fête, Bombay, where the machine was seen with interest by those connected with the Weaving Industry. Two persons received complete training in Carpet Weaving. The Demonstration was then transferred in March 1934 to Kankavli in the Ratnagiri District.

67. **Wool Weaving Demonstration.**—This Demonstration is conducted to train wool weavers in the improved methods of Kambli and Blanket Weaving and is the only one of its type in the Presidency.

It continued its work at Pandharpur in the Sholapur District till January 1934 and was well attended in the beginning. Several wool weavers in addition to the training in wool carding, spinning and weaving by improved methods and implements received also training in wool dyeing by improved methods. Two looms, five spinning wheels and three carding looms were introduced at Pandharpur. The Demonstration was then transferred to Natepute in February 1934 where there are some 100 old type blanket weaving looms.

The Wool Weaving Demonstrator gave training to the weaving staff deputed by the Department of Industries, Mysore, in improved methods in wool carding, spinning and weaving.

68. **Dyeing Demonstrations.**—Two Dyeing Demonstrations were maintained during the year under review—one in the Presidency proper and one in Sind :

(*a*) The Dyeing Demonstration which was working in the beginning of the year at the Industrial Exhibition in Poona finished its work there and was removed to Gokak on 18th April 1933 and started its regular work there from May 1933.

The demonstration of silk dyeing with improved methods and modern colours was first taken up at Gokak as silk dyeing was most vitally connected with the local saree and bodice cloth trade. In the beginning the demonstration faced some opposition arising out of the conservatism and indifference of the local dyers and weavers but gradually this died out when they were convinced by regular practical demonstrations of the usefulness and importance of the improved methods. The processes were so simplified that an average dyer could adopt them in his cottage successfully. Looking to the interest the weavers and dyers took in learning the methods and adopting them,

the local shopkeepers were induced to indent and stock the dyes required for silk dyeing. The success achieved in introducing such methods was due to the selection of dyes, economic working and systematic and scientific processes of application. Side by side with the dyeing of high class silk training was also given to those who did only " Charam Silk" Dyeing which is the dyeing of a low grade silk. Improvements in the existing processes were suggested and the persons concerned when satisfied with same, adopted them.

The Dyeing of ordinary and mercerised yarn was then shown. This too received appreciation from the local weavers and dyers and those interested in the industry adopted the improved methods. Calico and Mica printing work was also taught.

In addition to the local weavers and dyers 3 persons from Hukeri, Khandaratti and Savada also attended the Demonstration to receive training.

The Demonstration continued its work at Gokak till January 1934 and trained 22 persons in high class silk and cotton dyeing, 4 in Charam silk dyeing and 9 in Calico and Mica Printing. Four small dyehouses for cotton and 3 for silk dyeing came into existence as a result of the work of the Demonstration.

The Demonstration was then transferred to Bailhongal in February 1934 where it has aroused considerable interest.

(*b*) During the year under report the Dyeing Demonstration in Sind worked at Husri and Nasarpur.

At Husri the Demonstration was well attended by dyers. The use of Napthol dyes was demonstrated ; spray printing of fast colours on cloth, metallic printing, dyeing of indenthrine colours etc. were also shown. The local weavers and dyers interested in the methods took full advantage of the Demonstration till its work at Husri was over in July 1933. The Demonstration also helped several social institutions in Hyderabad in adopting improved methods in Dyeing and Printing.

The demonstration was then transferred to Nasarpur where in the beginning the conservatism of people worked against the activities of the Institution but this was soon overcome by a tactful handling of the situation. Demonstrations were given in dyeing of Napthols, Diazo, Indanthrines, Sulphur, Aniline Black and Turkey Red on yarns. Silk dyeing in various shades by improved methods was shown on semi-large scale. Weavers and dyers interested in the work attended the Demonstration regularly and received training. Some 5 of them started small dye-houses and now use in their work Turkey Red oil prepared by themselves as taught by the Demonstrator.

Instructions in dyeing and spray printing were also given to the students of the local A.-V. School.

One noteworthy feature was the demonstrations of applying modern Ceramic colours by new Majolika process to earthen ware given to some Kashigars of Nasarpur. Experiments in this connection were carried out by the Demonstrator in consultation with a leading firm of dyestuffs and chemicals. It is gratifying to note that the results so far achieved are encouraging. The new process was appreciated by the local Kashigars for their work and arrangements are in progress to extend these activities of the Demonstration for their benefit.

69. **Government Hand Weaving Institute.**—There were 30 students on the roll of the Institute at the end of the year—9 in the Second Year Advanced Course, 12 in the First Year Advanced Course and 9 in the Artisan Course. They all appeared in the Annual Examination for 1932–33 held in April 1933. Technically qualified men were appointed examiners. All the students passed in the Examination the majority securing distinction. Six students of the Institute also appeared in the City and Guilds Examinations. All these were successful.

During the year under review the present students of the Institute were taken on an excursion trip to Bombay, Surat, Baroda and Ahmedabad to give them an idea of the local hand and power weaving industry and technical institutions.

Remarks of the Examiners on the work of the students showed that the Institute had done good work during 1932–33. Most of the past students are reported to be doing well.

70. **Improvements in Hand Weaving Appliances.**—The Department continued during the year its work in connection with making improvements in hand weaving appliances with a view to enable the weaver to produce marketable articles with labour saving appliances.

(*a*) The Beam System to which a detailed reference was made in the Annual Report of this Department for 1929–30 under paragraph 27 is getting popular. During the year under report 22 beams were introduced at Dharangaon, 5 at Sinnar and 6 at Amoda.

(*b*) The mechanical dobby to which a detailed reference was made in the Annual Report of this Department for 1931–32 on page 34 under paragraph 65 is growing popular amongst the wears, especially handloom factory owners. As a result of its demonstration a number of such dobbies has been introduced.

(*c*) Under paragraph 69 of the Annual Report of this Department for 1932–33 a reference was made to the experiments under progress for the designing of a suitable and cheap loom for the manufacture of up-to-date Sari Borders and Tape Weaving. These experiments were finished by Mr. R. N. Varade, Head Master, Weaving School, Dharangaon, under the supervision and guidance of Mr. S. V. Telang, Senior Weaving Assistant of this Department in January 1934.

Sari Borders of veriegated floral designs with silk and artificial silk yarns are imported in large quantities in the Bombay Presidency. Attempts were therefore made to see if some suitable and cheap loom can be made for the manufacture of such sari borders and tapes. As a result of the experiments carried out, an automatic loom occupying 2′ × 2′ space has been designed. Its mechanism is so constructed that a mechanical dobby can be fitted on to it for producing borders with veriegated designs. The contrivance is quite plain and mechanism simple. Simply by revolving one iron wheel by a driving handle fixed to it a hand weaver can work the loom easily and can produce 6 yards of fine silk sari border in one hour. The loom is also useful for producing tapes. Its cost is Rs. 25.

(*d*) The question of size mixtures and cheapening the cost of sizing to handloom weavers was investigated by the Department during the year under review.

The Heads of the Technical Chemistry and Textile Departments of the Victoria Jubilee Technical Institute at my request undertook the work of investigation. As a result two recipes of size mixtures have been prepared, the adoption of which will enable the handloom weaver to obtain better results at lower cost than with the size mixtures at present used by him. The results of the investigation are being published as a bulletin of the Department.

71. **Miscellaneous Activities of the Weaving Section.**—In addition to running weaving schools and Demonstrations the weaving staff rendered assistance to the public in solving their techical difficulties in hand weaving and allied industries, supplying them estimates for small handloom factories and helping in the establishment of weaving classes by other bodies. Three examples of such work are noted below.

(*a*) The President of the Goan Immigration Committee, Bombay, requested this Department for suggesting some useful cottage industries. A scheme of a small weaving factory of 10 handlooms was prepared and supplied to the party. All possible help and advice were given to the Secretary of the Committee in purchasing handlooms, weaving accessories, yarns, etc. A past student of the Government Hand Weaving Institute, Poona, was, on the recommendation of this Department, appointed as Weaving Master to organise the factory which is situated at Colaba and is named "The Goan Emigrants Handloom Weaving Factory.

(2) A Weaving factory in Surat experienced difficulties in obtaining lustre and feel of silk spun cloths similar to those of imported articles. All possible technical help and advice were given to the factory.

(3) A local Industrial Institute for women was given advice for opening a knitting class.

A number of persons was supplied by the Weaving staff detailed estimates for small weaving factories and dyehouses.

INVESTIGATIONS COVERING COTTAGE INDUSTRIES

72. **Investigation into the Condition of Hand Weavers.**—The investigation in connection with hand weaving industry detailed on page 27 of last year's report was carried on further during the year under report in the following centres :—

Northern Division	..	Chikhli, Abrama, Surat and Broach.
Southern Division	..	Belgaum, Gadag, Hubli, Dharwar, Lakkundi and Gajendragad.
Central Division	..	Dharangaon, Bhingar, Sholapur, Malegaon, Parola, Nasik, Satara, Kharda, Chandor and Dhulia.
Sind ..	..	Nasarpur, Tatta, Lakhi, Lahori and Hala.

Owing to trade depression and severe competition from the Mills in the production of staple cloths turned out by handlooms the condition of the hand weavers with regard to earning of wages and selling prices of their goods was not satisfactory. The wages of the hand weavers showed no noteworthy changes this year also. In a very few centres where the industry is organised and where there was good demand for hand woven goods the wages showed some 10 to 15 per cent. increase. In general, however, the weavers obtained 14 to 55 per cent. less wages as compared with those of 1927. Thus the economic condition of the weavers showed no improvement during this year under review.

INVESTIGATIONS IN OIL SEED INDUSTRY—AS A COTTAGE INDUSTRY

73. There is a very large number of bullock driven ghannies scattered all over the cities, towns and villages of this Presidency. The extent of trade in edible oil expressed by these ghannies is considerable. There is also a large field for developing this industry on lines of improvements in the type and construction of the ghannies, in the keeping qualities of the expressed oil and in the utilization of the oil cake for agricultural and cattle food purposes. During the year under report an inquiry into the oil and seed industry was undertaken by the Department. This was also in reference to a communication received from the Imperial Council of Agricultural research. A scheme for the development of this Industry on definite lines of investigation and demonstrations has been drawn up by the Industrial Engineer and is now under consideration.

INVESTIGATIONS INTO HEMP INDUSTRY—AS A COTTAGE INDUSTRY

74. **Hemp Industry.**—The Imperial Council of Agricultural Research had appointed an officer to survey the Hemp Trade and Industry of India. His report was published and as a result the Council referred the question of the development of the Hemp Industry of this Presidency to the local Government. In the Presidency the total acreage during 1932-33 under

cultivation both hard and soft Hemp was 94,672 acres. Bombay also carries on a large export trade in hemp. Due to world wide economic depression this export trade has suffered to a considerable extent. The Presidency in particular and India in general import considerable quantities of hemp manufactures such as twine, cordage and hemp-flax mixture canvas, etc. The hemp grown in the Bombay Presidency has been classed as the best Indian hemp by the Empire Trading Board. There is thus a large field for developing this industry both in the extraction and grading of fibres for export, as well as the local utilisation of this fibre for manufacture of twine, etc. The industry was accordingly investigated by the Industrial Engineer and a scheme for the progressive development of the Hemp Trade and manufacture in the Presidency was submitted to Government in the Revenue Department for consideration.

INVESTIGATIONS INTO BONE MANURE—AS A COTTAGE INDUSTRY

75. **Bone Manure.**—The uses of bone as manure are well known. Practically all the bones available in the Presidency are exported. The agriculturist of this Presidency does not use bones for manure to any appreciable extent. One reason for this is that bones are not readily available in the form in which they are required for manuring purposes and another reason is the comparative high cost of the bone meal when delivered from a central distant crushing factory to the village field. It is proposed to utilize the bones available in this Presidency by crushing them in selected villages instead of in a distant central factory. The Industrial Engineer has investigated this Industry and a proposal for developing it is under consideration utilising Hand, Bullock or Power driven small bone crushers to be installed in individual villages for turning out bone meal for local use.

CHAPTER IV

TECHNICAL AND INDUSTRIAL EDUCATION

76. The method of control of Technical and Industrial Education by this Department as described in the report for 1931-32 remained unaltered.

There were during the year in the Presidency 8 Government aided institutions maintained by public bodies, 21 Government aided private institutions, 8 other institutions not in receipt of a grant but recognised by the Department of Industries and two Government institutions. The last 2 were administered and controlled directly by the Department of Industries. The rest were administered by the bodies which maintain them. The Department maintained its touch with these institutions through the agency of the Committee of Direction for Technical Education. A complete list of all these institutions is given in Appendix I at the end of the Report.

THE COMMITTEE OF DIRECTION FOR TECHNICAL EDUCATION

77. During the year under review the Committee of Direction for Technical Education comprised of the same gentlemen as last year except that Dr. T. S. Wheeler took the place of Mr. A. E. Williams retired.

78. **Inspection.**—The Teaching Inspector of the Committee as usual visited the various aided and recognised schools during the year in discharge of his duties. The Secretary of the Committee also visited some of the schools and inspected their methods of working, accounts, attendance registers and general management. I myself also visited 5 schools during the course of my tours in the Presidency.

79. **Instruction.**—During the year under report all the schools continued to teach the subjects taught in the previous years with practically no change.

Carpentry, Carpentry Drawing and wood-work technology were taught in almost all the schools.

Mechanical Engineering taught at the R. C. Technical Institute, Ahmedabad, F. S. Parekh Technical Institute, Surat, and Edward VII Technical School, Dhulia, continued to be of a fairly advanced character while that at the school of Industry, Ratnagiri, was of an elementary nature. The textile work in Cotton Spinning and Weaving taught in the R. C. Technical Institute, Ahmedabad, was of an advanced character.

Classes in wiremen's work were continued at Sukkur, Surat, Poona, Ahmednagar, Dhulia and Pandharpur.

Handloom weaving was taught in the schools at Anand, Bordi, Bombay, Ahmednagar, Alibag, Ratnagiri, Dhulia and Sholapur.

The Mechanical Apprentice Course was adopted at Jacobabad, Sukkur, Nadiad, Surat, Poona and Sholapur.

Practical Tailoring Classes were continued at Borsad, Yeravda and Manmad and Tailoring and Cutting work of an advanced character was taught at the Jadhav's College of Tailoring and Cutting, Poona.

During the year under review the Committee revised its Courses with the object of making them applicable to boys of varying standards of general education attending the various schools. Examinations in the next year will be held according to these revised courses.

80. **Examinations.**—The Annual Examinations of all the schools were held by the Committee of Direction for Technical Education and 365 candidates who were successful in the Final Examinations last year were awarded certificates of Proficiency.

81. **Certificates.**—During the year under report some changes were effected in the general form of the Certificates issued by the Committee for various subjects. The new certificates bear the name of the Department of Industries, Government seal and the signature of the

Director of Industries in addition to the signatures of the Chairman and the Secretary of the Committee. These changes, it is hoped, will add to the utility of the certificates to the holders of the same.

82. **Grant-in-aid.**—During the year under review the Department sanctioned grant-in-aid to various Technical and Industrial Schools amounting to Rs. 43,361 as shown in Appendix I, on the recommendation of the Committee of Direction for Technical Education.

In addition to the above grant-in-aid non-recurring equipment grants amounting to Rs. 336 were made to three schools and a *pro-forma* grant-in-aid of Rs. 1,797 was given to the Model Industrial Home, Kandivlee.

83. **Recognition of Schools.**—During the year under report the Tulsidas Technical Vidyalaya, Daharki, Sukkur, the Daroga Abdar and Signallers Training College, Hyderabad, Sind, and the Bai Avabai Framji Petit Parsee Girls' Orphanage, Hand Weaving and Dyeing Classes applied for recognition. Their applications are still under consideration. The recognition granted to the R. C. Mission Press Industrial School, Anand, the Tablige Talim Anjuman Islam Weaving Class, Pathardi and the S. L. Panday Industrial School, Matheran, had to be withdrawn during the year as these institutions failed to comply with the requirements of the Committee.

84. **Miscellaneous.**—Technical advice was given to interested parties for small industrial classes and various courses. Some examples of this work are given below :—

A Course for Tanning was prepared and supplied to the Administrative Officer, District School Board, Ahmednagar.

Advice regarding the opening of a weaving class was given to the administrators of the Hoosonali Abdulla Dholkawalla Charities Trust, and one party at Dadar.

Technical advice was given for courses, equipment, etc., to the newly founded Mahomed Haji Saboo Siddik Institution of Bombay.

Syllabi of Motor Mechanics and Watch Repairing with estimates of expenditure were supplied to the School Board, Nawabshah.

85. **Expenditure.**—A grant-in-aid of Rs. 14,102-7-5 was made to the Committee of Direction for Technical Education to meet its expenditure during the year under review as shown below :—

	Rs.	a.	p.
(1) Establishment charges	3,747	0	0
(2) Inspection charges	3,480	8	8
(3) Examination charges	6,874	14	9
	14,102	7	5

A sum of Rs. 110 was received as examination fees from one industrial school which was credited to Government.

VICTORIA JUBILEE TECHNICAL INSTITUTE, BOMBAY

86. This is the premier Technical Institute in the Presidency and is in a class by itself. The standard and courses of instruction were the same as described in the last year's report. The Institute continued to be managed by a Board of Trustees of which the Chairman and 7 members including the Director of Industries are nominated by Government.

87. **Instruction.**—Regular Courses of instruction covering a period of four years are given in (*a*) Mechanical Engineering, (*b*) Electrical Engineering, (*c*) Textile Manufacture, (*d*) Technical and Applied Chemistry and (*e*) Sanitary Engineering and Plumbing.

Candidates from different parts of India apply for admission and it has been observed that there is a consistently increasing demand for admission to the Electrical Engineering Course. At the entrance examination for admission in June 1933, 402 candidates applied for admission; of these 349 actually appeared in the examination and 152 out of them were admitted of whom 99 were from the Bombay Presidency.

The results of the Annual Examination of the Institute were satisfactory. 40 out of 40 passed in Mechanical Engineering, 41 out of 47 in the Electrical Engineering, 22 out of 26 in Textile Manufacture, 13 out of 13 in Technical and Applied Chemistry and 10 out of 10 in Sanitary Engineering and Plumbing.

Ninety-nine students of the Institute also appeared in the local Examinations of the City and Guilds of London out of which 53 were successful, the percentage of the results in this connection being in line with that of the overseas candidates in general.

88. **Miscellaneous Classes.**—In addition to the regular Courses mentioned above apprentice courses as usual were held once a week for instruction in Elementary Mechanical and Electrical Engineering, Cotton Spinning and Weaving and Electric Wiremen Class I and II corresponding to the syllabus of Government Examination for respective Certificates. All these classes, especially those for the Electrical Wiremen continued to attract and were attended by a large number of apprentices engaged in the different industries.

89. **New Textile Workshop.**—The new machinery presented to the Institute by Messrs. Platt Bros. & Co. of Oldham as mentioned in paragraph 84 of last year's Report was, during the year, erected and put into smooth working condition. The Framji Dinshaw Petit Memorial Building which was erected for the Textile Department to house the new machinery was opened by His Excellency the Governor of Bombay on 29th March 1934.

90. **Expenditure.**—The total expenditure incurred by the Institute during the year was about Rs. 2,64,600 against which a Government grant of Rs. 1,19,000 was made to the Institute by the Department of Industries.

GOVERNMENT TECHNICAL INSTITUTIONS CONTROLLED BY THE DEPARTMENT OF INDUSTRIES

91. There were 2 Technical Institutions in the Bombay Presidency maintained by Government and administered directly by the Department of Industries during the year, viz. the R. C. Technical Institute, Ahmedabad, and the Technical School, Ahwa.

92. **R. C. Technical Institute.**—While the standard of instruction attained in this institution is lower than that at the Victoria Jubilee Technical Institute, Bombay, it is higher than that at the other technical schools in the Presidency. Instruction covering a period of 3 years is provided in (1) Cotton spinning, (2) Cotton weaving and (3) Mechanical Engineering. During the year under review 213 applications were received for admission to the Institute ; 88 candidates actually appeared at the Entrance Examination and 29 candidates who had higher qualifications were exempted from the Examination. The total number admitted during the year was 74 out of which 20 were admitted to the Spinning Course, 22 to the Cotton Weaving Course and 32 to the Mechanical Engineering Course. The total number of students in the Institute during the year was 133.

Various scholarships founded by the public were as usual granted to suitable students. In addition to these 6 Government scholarships of Rs. 10 per month each were awarded to deserving students.

The Annual Examination for 1932–33 of all the classes of the Institute was held by the Committee of Direction for Technical Education, Bombay, in April 1933 and out of 129 students who appeared in the Examination 112 passed bringing the result to 86 per cent.

Thirty-two students of the Institute also appeared in the City and Guilds of London Institute Examination in the various grades of different subjects and 21 passed against 8 out of 8 last year. The results of the Institute for 1932–33 were satisfactory.

The prize distribution and Social Gathering of the Institute were celebrated in January 1934 when Seth Santilal Mangaldas, a local Millowner, presided and many millowners, officers and distinguished citizens were present.

During the year under report Messrs. Platt Bros. Ltd. were good enough to present to the Institute their New Model Powerloom.

93. **Expenditure.**—The total expenditure incurred during the year was Rs. 30,953. Receipts were Rs. 3,240. Therefore the net expenditure was Rs. 27,713.

94. **The Government Technical School, Ahwa.**—This school was maintained to train the local hill tribes who inhabit the Dangs in various Cottage industries with a view to enable them to earn a living

rather than to roam about in forests. The school continued to show satisfactory work. As the Dangs area was transferred to the Government of India from June 1933, the control of the school by the Department of Industries since then ceased.

Expenditure.—The total expenditure on the school by the Department of Industries till the date of its transfer to Government of India was Rs. 360-12-0.

SCHOLARSHIPS

95. The Department of Industries annually awards a number of scholarships tenable at the Victoria Jubilee Technical Institute, Bombay, R. C. Technical Institute, Ahmedabad, F. S. Parekh Technical Institute, Surat, and the Hand Weaving Institute, Poona. A number of scholarships is also given to the students of the peripatetic weaving schools in the Presidency proper and Sind reviewed in Chapter III.

In addition to the above, ordinarily 3 scholarships are awarded for research in Technical Chemistry and 2 for practical experience in Electrical Engineering.

96. **Scholarships tenable at the Victoria Jubilee Technical Institute, Bombay.**—These scholarships as mentioned in last year's report, are intended for Intermediate and Backward Hindu and Muhammadan candidates. The total number of scholarships available is 11. During the year under review the Department received 25 applications for consideration of which 14 were from Intermediate Hindus, 7 from Muhammadans, 1 from Backward Class and 3 from Advanced Communities which were left out.

Intermediate Classes.—Three students in Electrical Engineering, 1 in Textile Manufacture and 1 in Mechanical Engineering received the scholarships for this class.

Backward Classes.—There was one candidate representing this group in the Mechanical Engineering Course who received the scholarship.

Muhammadans.—Two students in Electrical Engineering and one in Sanitary Engineering were granted scholarships.

97. **Technical Chemistry scholarships.**—As a measure of retrenchment in expenditure only two scholarships for research work in Technical Chemistry were sanctioned by Government. The third scholarship was held in abeyance. Both the selected scholars joined the Royal Institute of Science, Bombay, and their work during the year was satisfactory.

The scholarships of the two candidates, one at Bangalore and the other at the Royal Institute of Science, Bombay, which were awarded last year were renewed for one year more during the year under report.

SCHOLARSHIPS IN ELECTRICAL ENGINEERING

98. In this branch of training only one scholarship for practical training in Electrical Engineering was awarded during the year under report. The other scholarship was held in abeyance as a measure of retrenchment. The selected candidate joined the Tata Hydro Electric Company and his work during the year was satisfactory.

STATE TECHNICAL SCHOLARSHIPS TENABLE ABROAD

99. A special scholarship for further training in textile manufacture was awarded to a backward class candidate from the Victoria Jubilee Technical Institute for training in the Municipal College of Technology, Manchester. The scholar left India in the month of September 1933.

MISCELLANEOUS WORK

100. **Facilities for practical training.**—As usual a number of requests was received from students for advice regarding facilities for training in technical institutions both in foreign countries and in India. Students who wanted information about facilities for training in foreign countries were referred to the University Information Bureau. Necessary advice about technical courses in institutions in India was given by this Department in a number of cases.

101. **Industrial and Scientific Research, 1933-34.**—A summary of the progress of scientific and industrial research during 1933–34 was sent to the Government of India for inclusion in the Annual Report of the Committee of the Privy Council for Scientific and Industrial Research, London. The material for the summary was furnished by some of the educational and scientific institutions in this Presidency.

CHAPTER V

FISHERIES

102. The establishment of a fisheries section under this Department in the middle of November last opened a new chapter in the history of the development of marine fisheries in the Bombay Presidency.

The inauguration of the fisheries section was hastened by the publication of Mr. H. T. Sorley's report on the Marine Fisheries of the Bombay Presidency. Government took a keen interest in the recommendations embodied in the report and directed me to investigate and put forward definite suggestions for helping the fishermen specially by increasing the available supply of fish and improving the methods for marketing it.

The fishermen have so far used ordinary sail boats for their operations. This necessitates their not going far out to sea and returning to port often prematurely, so that the catch may not go bad. I, therefore, recommended

to Government that practical working of motor boats should be demonstrated to the fishermen and that they should be taught to operate such boats. Government accepted this suggestion and authorised the construction of 2 motor boats, training of 5 fishermen at a time, and the appointment of the necessary crew. They also sanctioned the creation of the post of Fisheries Officer. Dr. S. B. Setna was accordingly appointed Fisheries Officer with effect from November 1st, 1933. As the construction of the motor boats was to take some time, in order that the scheme may be launched as soon as possible Government permitted me to obtain the loan of a launch from the Royal Indian Marine for six months.

The Fisheries Scheme was officially inaugurated on November 10th last by Sir Frederick Sykes, the then Governor of Bombay, at Danda, where he launched the motor boat No. 206, which was then christened the " Lady Sykes ".

I decided to work the scheme in co-operation with Mr. Motiram Patil, who is the Patel of the Danda fishing village, as he had shown from the outset considerable enthusiasm for the success of the scheme.

An agreement was drawn up between this Department and Mr. Motiram Patil. According to this, he pays to Government the cost of petrol consumed by the launch at the rate of the cost of crude oil per gallon, the difference between the price of petrol and crude oil being borne by Government. Mr. Patil also pays the entire cost of lubrication oil and part of the wages of the crew. The Burmah Shell Oil Company, which at the beginning of the fishing season in October had equipped an ordinary sailing craft (24 feet in length) with a 10 horse power single cylinder Diesel engine also placed their boat at the disposal of Mr. Patil and requested this Department to supervise its working. This boat is named " Shelmari ".

Both " Lady Sykes" and " Shelmari" were used as carrier vessels. The " Lady Sykes" worked in conjunction with 15 sail boats, which supplied their catch to her. This enabled the actual fishing boats to remain at sea for a longer period than was the case before. The " Lady Sykes " has, from the time of the inauguration of the scheme, been working between Sassoon Dock and Revdanda, which are about 25 miles apart. She has occasionally made trips to Bassein.

The first trip made by the " Lady Sykes " after the inauguration of the scheme at Danda on the 10th November 1933, was on the 16th November 1933. She performed 5 more trips in the same month. The number of trips in December 1933, January, February and March 1934 were 18, 8, 10 and 5 respectively. On an average the launch transported per trip in November and December 1933, January, February and March 1934, 1,000 lbs., 550 lbs., 340 lbs., 508 lbs. and 264 lbs. of fish respectively.

The "Shelmari" (B. O. C. boat) transported fish from Bassein to Danda. It performed during October, November and December 1933 and January, February and March 1934, 11, 10, 9, 14, 8 and 9 trips respectively. On an average she carried 500 lbs. of fish per trip.

The receipts credited to Government in part payment of the mechanics wages, the cost of fuel and lubricating oil in respect of the " Lady Sykes " for the period ending March 1934 were Rs. 322-14-6.

103. **Benefit of Motor Boats.**—The advantages of the experiment have within less than six months of its introduction been quite striking despite the comparatively few trips made by the boats owing to the lateness of the season, when the scheme was started and Mr. Patil's difficulty to reach an understanding with the fishermen owing to the same reason, as they had already at the beginning of the season made their own arrangements for the disposal of their catch. Apart from this, there were other unfavourable factors such as the breakdown of the engine, bhangs (low tides), religious festivals and unfavourable weather. Further the launches have not sufficient speed and other conveniences, such as provision for cooking, washing and other arrangements to enable the crew to remain at sea for a longer time. Added to all these handicaps, there was a general scarcity of fish during the year and its available supply was on a much smaller scale than in previous years.

It has been found that as the fish brought by the motor boats reached port in a fresher condition it realised a higher price than the fish brought in by sail boats. Owing to this the fish brought in by the "Lady Sykes" realised on an average some 50 to 75 per cent. more per kodi (=22 Pomfret) than the price obtained for similar fish brought in by the carrier sail boat.

It may be stated that the launch " Lady Sykes " replaced in its work as a carrier, one sail boat and two tonies, which required nine men to operate them. The actual operating cost of a motor launch run by a Diesel Engine is estimated to be about the same as the operating cost of the sail craft and the tonies which it replaces. Under the circumstances the difference in prices realised by the fish brought in by the motor boats and sail craft respectively is net additional gain to the fishermen.

Although the demonstration of motor boats has been carried out only for about 3 months and that owing to difficulties mentioned above on a very restricted scale, it has enabled the fishermen to realise the manifold advantages accruing from the use of such motor boats. Mr. Motiram Patil of Danda and some fish merchants have accordingly approached this Department with requests to be helped to purchase motor boats on instalment system. Additional evidence of the appreciation of the utility of such motor transport is provided by the example of Mr. K. M. Shroff of Satpatti, who has converted an ordinary sail craft into a power propelled boat by equipping it with a 18 horse power engine.

104. **Training of fishermen.**—A part of the scheme sanctioned by Government provided for the training of youths of the fishermen's community in the operation of the motor launches, so that, when the fishermen eventually have their own boats, they may be able to avail themselves of the services of the youths of their own community, and thus avoid the need of engaging expensive mechanics and sarangs.

Three stipends of the value of Rs. 20 per mensem were accordingly awarded during the period under review. The selected apprentices were under training on the " Lady Sykes " and " Shelmari " and they have made remarkable progress. Evidence of their capacity to operate successfully motor launches is furnished by the fact that during the illness of the regular mechanic on the Burmah Shell Boat " Shelmari ", the apprentice on that boat took charge of the boat. He operated the boat successfully, put out to the fishing grounds, collected the catch and returned with it to Bombay. His work was quite satisfactory.

The Department has, with the object of encouraging the fishing community, approached the Government of India, through the Principal Officer, Mercantile Marine Department, with a request to relax its rules to enable the youths of the fishermen's community to qualify as mechanics and sarangs after a course of six months' training on the fishing launches of this department, and for the issue of certificates to them on the completion of such training.

105. **Other steps to help Industry.**—Other steps have also been taken to promote the development of the Fishing Industry.

Government recognising the pressing need of increasing the city's marketable supply of fish, convened a conference on July 27th, 1933, of the railway authorities, coastal shipping concerns, and others engaged in the fruit and fish trade of Bombay. A preliminary report, prepared by this Department, formed the basis of the discussion at the conference. The results of these deliberations were embodied in a press note, dated August 4th, 1933. Further investigations were made by the Fisheries Officer and the grievances of the fishermen and traders were inquired into. Proposals for changes in railway timings, for lower freight and lorry transport from the railway station to the markets were forwarded to Government in a report by this department.

This department is endeavouring to augment the supply of fish to the city by helping local merchants by ascertaining the prospects of importing fish into Bombay from Malvan, Veraval, Malpe and Mangalore, all of which are centres noted for big catches of fish.

106. **Development of Oyster Fishery.**—An inquiry was undertaken by this Department into the possibility of developing oyster and placuna placenta (pearl oyster fishery) fisheries. The question of taking over the work of the development of oysters in Sind by the department is under consideration. A report embodying suggestions to place the oyster fisheries of Sind on a scientific basis has been submitted to Government.

107. **Fisheries Information Bureau.**—The Fisheries Section of this department supplies a long felt need and evidence of this is furnished by the numerous inquiries addressed to it from places all over India. Information has been sought on a variety of subjects including the canning of fish, manufacture of fish manure, extraction of fish oil and development of other subsidiary industries. In this connection it is proposed to organise a Bureau of Fisheries Information. The function of this bureau will be to collate and supply information about the local and other fisheries. The data and the statistics collected by the bureau will be directly useful to the fishing industry as it will be in a position to supply information not now available to the public.

CHAPTER VI

WORK OF THE DEPARTMENT—MISCELLANEOUS

108. In the previous chapters the work of the Department in connection with organised industries, cottage industries, Technical and Industrial Education and Fisheries has been dealt with. The Department does quite an appreciable amount of work which cannot be properly included under any of the above heads, and yet is of sufficient importance to be noted in the Annual Report. Work of this nature is, therefore, referred to in the present chapter.

WORK FOR OTHER DEPARTMENTS OF GOVERNMENT

109. (*a*) A complaint was made to the Indian Trade Commissioner, London, by the United Tanners' Federation, London, regarding deterioration in the quality of myrabolans exported from India to European countries particularly relating to shipments from Bombay. The matter was investigated by the Department at the instance of the Director-General of Commercial Intelligence and Statistics, Calcutta. The party concerned who is one of the biggest shippers was interviewed and it was arranged that the shippers should forward a fresh revised sample to London for examination. In the meantime the United Tanners' Federation, London, forwarded standard samples of myrabolans to the Director-General of Commercial Intelligence and Statistics who has requested this Department to keep them for showing same to enquirers.

(*b*) The Director-General of Commercial Intelligence and Statistics, Calcutta, referred to this Department an enquiry received by him on behalf of a firm in New Orleans regarding the possibility of supplying a type of cloth known as "Seer Sucker". Detailed enquiries made by the Department showed that the cloth in question was not manufactured in this Presidency by any mill or handloom weaving factory. The possibility of producing the cloth in one of the Department's weaving

schools was then considered and one of the weaving assistants of this Department was entrusted with the work. After making the necessary purchases of materials required for the purpose, cloth matching the sample sent by the Director-General of Commercial Intelligence and Statistics, Calcutta, was produced at one of the weaving schools of this Department. Seeing that the cloth can be manufactured on handlooms some prominent owners of handloom factories in Surat were shown the sample manufactured at the school who were prepared to manufacture the cloth if rates were favourable. Necessary information was communicated to the Director-General of Commercial Intelligence and Statistics, Calcutta.

(c) The work of carrying out a surprise check of the articles in stock at the office of the Superintendent, Government Printing and Stationery, Bombay, with the sealed samples was entrusted to this Department—*vide* Government Resolution, Revenue Department, No. 7662, dated the 30th April 1930. This work was carried out for the third time during the year under review. The articles in stock were checked with the sealed samples received in this office from the Superintendent, Government Printing and Stationery, Bombay, and a detailed report was submitted to Government.

(*d*) The Superintendent, Government Printing and Stationery, Bombay, forwarded to this office from time to time samples of such articles as cloth, ink, typewriter oil, turbans, candles etc. for test and report.

(*e*) At the request of the Superintendent, Government Distillery, Nasik Road, Nasik, the Industrial Chemist of this Department prepared a formula for specially denatured spirit for tobacco industry. A copy of the formula and the specifications for denaturants were forwarded to the Commissioner of Excise, who has fixed the price of specially denatured spirit for the tobacco industry at Rs. 2-14-0 per bulk gallon.

(*f*) Some complaints were received by the Superintendent, Nasik Distillery, regarding the specially denatured alcohol supplied to the soap manufacturers. The Industrial Chemist when he was on tour visited the Nasik Distillery and examined and discussed with the Superintendent the details of the case and suggested to him the use of denaturing ingredients of proper specification and arranged for the supply of the same.

(*g*) The Surveyor, Photoregistry Office, Poona, requested this Department to investigate whether it was possible to reclaim silver from fixing baths. The Industrial Chemist visited the laboratory of the above officer and discussed with him the various details of the problem. He brought a representative sample of the solution in question and determined the amount of silver present in the solution and the amount that could be recovered. He found that the amount of silver that could be recovered was quite appreciable. Details of the process with the estimates for the

silver recovery plant and the cost of recovery etc. were supplied to the Surveyor, Photoregistry Office. It was found that silver worth about Rs. 1,000 can be recovered from the solution which is at present being thrown away.

(*h*) It was mentioned in the last year's report that the Department of Agriculture, Bombay Presidency, was carrying out experiments on the cultivation of American Virginia tobacco. That department found that unless tobacco was cured it would not fetch the proper price. It accordingly approached this Department for help in building a proper flue curing barn for curing tobacco. The Industrial Chemist of this Department designed the barn, furnace and the flues. The barn was erected at Nadiad at the Government Tobacco Research Station under his supervision. The Tobacco Breeder, Nadiad, conducted curing operations according to the instructions of the Industrial Chemist. That officer has reported that he was able to carry out curing operations successfully without any difficulty.

ACTS, LEGISLATIVE MEASURES ETC.

110. The Department was requested to give its opinion on the following measures :—

The Trade Disputes Act.
Arrest and imprisonment for debt.
Periods of wage payment.
Payment of wages Bill.

A reference was made in the last year's report to the passing of the Bombay Weights and Measures Act, 1932. The rules framed by the Department were published by Government for general information of the public and commercial bodies likely to be affected by them. The local bodies and the trade sent in during the year their observations on the draft rules which are under consideration.

MISCELLANEOUS ACTIVITIES OF THE DIRECTOR OF INDUSTRIES

111. During the year under review the Director was a member of the following bodies :—

The Bombay Legislative Council.
The Board of Trustees of the Prince of Wales Museum.
Advisory Committee of the Royal Institute of Science, Bombay.
The Board of Management of the Victoria Jubilee Technical Institute, Bombay.
The Committee of Direction for Technical Education.
The Bombay Smoke Nuisances Commission.
The Bombay University Senate.
The Bombay University Board of Studies in Engineering.

College of Engineering sub-committee to consider the question of syllabus in Electrical Engineering.

Board of Visitors of the new University Department of Chemical Technology.

The Director was also a member of the Committee appointed by the Syndicate of the Bombay University for the triennial inspection of the N. E. D. Civil Engineering College, Karachi. The Committee inspected the College in the middle of January of this year and submitted its report to the University Registrar.

CONFERENCES, COMMITTEES ETC.

112. A conference of the Ministers and Directors of Industries was held in July 1933 in Simla. The Minister in charge of Industries and the Director of Industries attended the Conference at which subjects of industrial importance were discussed.

The Director also participated along with the Honourable Minister in the Sugar Conference held at Simla in July 1933. At the invitation of the Government of India the Director attended the Indo-Japanese Trade Conference in Simla in October 1933 as an unofficial adviser in the interests of the handloom industry.

EXHIBITIONS

113. It is the policy of this Department to participate in the Presidency and District Industrial and Agricultural Shows by deputing its Weaving Section Staff with a view to demonstrate improved methods in hand weaving, and sizing, dyeing and calico printing, carding and spinning of wool, weaving of blankets, weaving of carpets from cotton yarn waste as may be necessary at a particular show or exhibition.

The principal shows in which the Department participated during the year were Agricultural Show, Panchavati, Nasik, Agricultural Show, Bategaon, Agricultural and Cattle and Rural Uplift Show, Saswad, H.O.H. Fete, Bombay, Agricultural Show, Chikodi, and Co-operative Conference Exhibition, Tando-Allayar in Sind.

The Department also brought to the notice of commercial bodies and others exhibitions due to be held in other parts of India and abroad.

114. **H.O.H. Fete and Exhibition.**—The Department took part in the H.O.H. Fete and Exhibition held in Bombay in February 1934. It organised three sections, viz. (1) Art-crafts of the Presidency, (2) Weaving Section, and (3) Industrial Research Section. 14 stalls were taken up for the purpose.

In the Art-crafts Section, samples of work of the artisans of the Bombay Presidency in different crafts were exhibited. Exhibits were collected on loan from the Bombay Swadeshi Co-operative Stores Ltd., Messrs. Pohoomull Bros., Messrs. Hiranand Valiram, Bombay, Svadeshi, Bombay, and the Reay Art Workshop of the Sir J. J. School of Art, Bombay. Thanks of the Department are due to these firms for co-operating with

the Department with a view to bring to the notice of the public beautiful art-crafts of the Presidency in one place. Special thanks are also due to the Sir J. J. School of Art for lending exceptionally beautiful and artistic articles in brass-ware, silver and stone carving prepared by the students of the Reay Art Workshop. It is gratifying to note that a large number of people took interest in this section. Inquiries were made for Sind Embroidery, necklaces of semi-precious stones from Cambay, lacquered toys from Gokak and Hala, pottery from Hala and gold and silver laces from Surat, Bandhani work from Surat, as well as for sandal wood boxes, etc. Many of the visitors were disappointed when they were informed that the articles exhibited were not for sale. Many of them took addresses of the firms from whom these articles could be obtained.

In the hand weaving section a practical demonstration was made of all the various processes, namely, preparation of the warp, sizing of yarn, weaving of cloth with mechanical dobby etc. A tape loom was also shown which could be worked by hand. Demonstration of carpet weaving from cotton waste was given. Great interest was taken by the visitors in the mechanical dobby, tape loom and the process of preparing carpets from cotton waste.

In the Industrial Research Section, practical demonstrations were given in the extraction of essential oils, preparation of mango pulp powder and refining of natural soda.

LIBRARY

115. A library is attached to the Department which contains over 3,700 books, publications and directories, etc. The library is being gradually added to so as to increase its usefulness to the Department and the public interested in industries. Some important technical journals are also regularly received in the Department. The library is open to the general public at any time during office hours on working days. It is gratifying to note that members of the public are taking full advantage of this arrangement.

CHAPTER VII

CONCLUSION

STAFF

116. I held charge of the office of Director of Industries for the whole year. Mr. M. E. Haskell held the post of Industrial Engineer for the whole year. Dr. M. S. Patel continued to work as Industrial Chemist. Mr. B. Tayabali worked as Principal of the R. C. Technical Institute, Ahmedabad. Dr. S. B. Setna was appointed as Fisheries Officer from 1st November 1933. The other staff of the Department was the same as mentioned in the report for the year 1929-30.

TOURING

117. During the year I was out of my Headquarters for 49 days.

The Industrial Engineer was out of Headquarters for 38 days and visited Poona, Yeola, Surat, Satara and Kirloskarwadi. His visits to Poona, Yeola and Surat were in connection with the demonstration of improved wire drawing and wire flattening machines.

Similarly, the Industrial Chemist was out of Headquarters for 34 days. He visited Bassein, Nasik, Belapur, Kirloskarwadi, Poona, Surat, Nadiad, Kharaghoda, Than Road, Ahmedabad, Vengurla, Malvan, Kankavali, Karwar, Marmagoa, Ratnagiri, Ankleshwar, Navsari. His visits to these places were in connection with the investigation of Chrome ore, natural gas, curing of tobacco, oil industry etc.

VISITS TO WORKS

118. The Director and the Industrial Engineer and the Industrial Chemist visited a number of concerns in connection with the investigations in hand and rendering of technical advice, etc.

EXPENDITURE

119. The expenditure incurred by the Department of Industries during the financial year 1933–34 and the three preceding years was as follows :—

				Rs.
1930–31	..	..	..	1,23,715
1931–32	..	..	..	3,67,019
1932–33	..	..	..	3,37,069
1933–34	..	..	..	3,53,368

The receipts during the year were Rs. 9,564. The total net expenditure of the Department during 1933–34 was, therefore, Rs. 3,43,804.

CONCLUSION

120. I am glad to record that the entire staff both technical and clerical worked well and efficiently throughout the year.

P. B. ADVANI,
Director of Industries.

APPENDIX I

Recognised Technical and Industrial Schools in the Bombay Presidency

	Grant paid in 1933-34	
	Grant-in-aid (Recurring)	Equipment grant (Non-recurring)
	Rs.	Rs.
(1) Schools run by Local Bodies receiving grants-in-aid from the Department of Industries		
1. Municipal Technical School, Jacobabad	1,790	....
2. F. S. Parekh Technical Institute, Surat	6,000	....
3. V. J. Municipal Technical School, Poona	2,038	....
4. Local Board Industrial School, Satara	1,021	....
5. Robertson School of Industry, Pandharpur	830	....
6. Edward VII Technical School, Dhulia	3,137	....
7. School of Industry, Ratnagiri	6,915	....
*8. Municipal Technical School, Sholapur	873	....
(2) Schools managed by private bodies receiving grants-in-aid from the Department of Industries		
9. V. J. Technical Institute, Sukkur	2,132	64
10. Nadiad Industrial Institute, Nadiad	1,083	....
11. Salvation Army Boys Weaving School, Anand	495	....
12. I. P. Mission Industrial School, Borsad	1,023	....
13. Vocational Training School, Ankleshwar	770	22
14. Mahajan Home Industrial School, Surat	610	....
15. A. R. Soonawalla Industrial School, Bordi	1,050	....
16. C. B. Mission Boys Industrial School, Palghar	434	....
17. Empson Workshops and Technical School, Poona	1,063	....
18. Sir D. M. Petit Industrial School, Sirur	759	....
19. S. P. G. Mission Industrial School, Ahmednagar	1,868	....
20. Sir D. M. Petit Industrial School, Ahmednagar	1,480	250
21. Salvation Army Boys Industrial School, Ahmednagar	642	....
22. St. Barnabas' Industrial School, Manmad	1,050	....
23. K. E. S. Topiwalla Industrial School, Alibag	1,473	....
24. American Mission School for the Blind, Bombay	985	....
25. D. C. Mission Industrial School, Bombay	426	....
26. Textile Technical School, Parel, Bombay	1,260	....
27. D. N. Poor Boys Seminary Industrial School, Bombay ..	880	....
*28. American Weslyan Mission Industrial School, Sanjan	324	....
29. S. A. Willingdon Boys Home, Bombay	950	....
	43,361	336

(3) Recognised Schools

(a) Schools managed by Local Bodies not receiving grant-in-aid but recognised by the Department of Industries

Note.—There was no such school during the year.

(b) Schools managed by private bodies not receiving grant-in-aid but recognised by the Department of Industries

30. Jadhav's College of Tailoring and Cutting, Poona.
†31. R. C. Mission Anand Press Industrial School, Anand.
†32. The S. L. Panday Industrial School, Matheran.
†33. Tablige Talim Anjuman Islam Weaving Class, Pathardi.
34. Pandharpur Electric Supply Company's Wiremen's Class, Pandharpur.

(c) Government Reformatory and Settlement schools not receiving grant-in-aid from the Department of Industries, but recognised by the Department

35. Yeravda Reformatory School, Yeravda.
36.*David Sassoon Industrial and Reformatory School, Bombay.
37. Industrial Settlement School, Sholapur.
38. Industrial Settlement School, Bijapur.
39. Industrial Settlement School, Hubli.
40. Industrial Settlement School, Gadag.

(4) Government Technical Schools directly controlled by the Director of Industries, Bombay

41. The R. C. Technical Institute, Ahmedabad.
‡42. The Government Technical School, Ahwa, Dangs.

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* Schools Nos. 8 and 28 were admitted for grant-in-aid during the year.

† The recognition granted to schools Nos. 31, 32 and 33 had to be withdrawn during the year from April 1933.

‡ As the Dangs area was transferred to Government of India from June 1933 the control over this school by the Department of Industries, Bombay, ceased from that time.

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GOVERNMENT OF BOMBAY.

GENERAL DEPARTMENT.

Resolution No. P. 73.

Bombay Castle, 27th November 1934.

Letter from the Director of Industries No. I.C. 20/9462, dated the 17th/19th November 1934—Forwarding the final copy of the Annual Report of the Department of Industries for the year 1933–34.

RESOLUTION.—Recorded.

By order of the Government of Bombay (Transferred Departments),

H. F. KNIGHT,

Secretary to Government.

To

*The Commissioner in Sind,
*The Commissioners of Divisions,
*The Commissioner of Excise, Bombay,
*The Director of Industries,
*The Collector of Bombay,
*All other Collectors including the Deputy Commissioner, Upper Sind Frontier,
*The Collector of Salt Revenue,
*The Collector of Customs and Shipping Master, Karachi,
*The Director of Agriculture,
*The Registrar, Co-operative Societies,
*The Chief Conservator of Forests, Bombay Presidency,
*The Conservator of Forests, Northern Circle,
*The Conservator of Forests, Central Circle,
*The Conservator of Forests, Southern Circle,

*With copies of the Report.

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*The Conservator of Forests, Sind Circle,
*The Superintendent, Government Printing and Stationery, Bombay,
*The Manager, Government Central Press,
*The Accountant General, Bombay,
*The Director of Public Instruction,
*The Director of Information (with copies of the Report for the Editors' Tables and Editors of Newspapers),
*The Compiler, General Administration Report,
*The Oriental Translator to Government,
*The Private Secretary to His Excellency the Governor,
*The Revenue Department,
*The Educational Department,
*The Public Works Department,
*The Finance Department,
*The Home Department,
†The Secretary, Legislative Council (for the Reading Room for the Members of the Legislative Council),
†The Chamber of Commerce, Bombay,
†The Chamber of Commerce, Karachi,
†The Maharashtra Chamber of Commerce, Bombay,
†The Memon Chamber of Commerce, Bombay,
†The Bombay Presidency Association,
†The Indian Merchants' Chamber, Bombay,
†The Millowners' Association, Bombay,
†The Millowners' Association, Ahmedabad,
†The Bombay Piecegoods Native Merchants' Association, Bombay,
†The Bombay Presidency Trades Association,
†The Karachi Cotton Association,
†The Deccan Merchants' Association, Bombay,
†The Grain Merchants' Association, Bombay,
†The Bombay Underwriters' Association, Bombay,
†The Indian Merchants' Association, Karachi,
†The Indian Chamber of Commerce in Great Britain, London,
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* With copies of the Report.

† By letter.

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